Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the subject application, and please amend the claims as follows:

1. (Currently amended): A method of determining the subsurface structure of a survey area by processing marine magnetic data obtained by towing first and second spaced apart sensors behind a ship, the method including:

obtaining raw magnetic gradient data from the sensors;

determining an estimate of the gradient of the ship bias from the raw magnetic gradient data obtained by the sensors;

determining the trend of the gradient of the ship bias ~~detected by the sensors~~ from that estimate of the gradient of the ship bias;

subtracting the trend from the raw magnetic gradient data to obtain corrected gradient data; ~~and~~

processing the corrected gradient data to provide a data output; and

processing the data output to determine the subsurface structure of the survey area.

2. (Canceled)

3. (Currently amended): The method of claim 1 wherein the raw magnetic gradient data is calculated as the measured magnetic signal at ~~the~~ a leading sensor of the spaced apart sensor less the measured magnetic signal at ~~the~~ a trailing sensor of the spaced apart sensor, divided by the distance between the sensors.

4. (Original): The method of claim 1 wherein the trend of the gradient of the ship bias is determined by applying the gradient of the ship bias data to a B-Spline filter with smoothness 0.8.

5. (Original): The method of claim 1 wherein the processing comprises the application of the corrected gradient data over sample intervals, integration of the corrected gradient data into total magnetic intensity data, and application of a low pass filter to the integrated total magnetic intensity data to provide the data output.

6. (Original): The method of claim 5 wherein the total magnetic intensity is obtained by integrating the corrected gradient data in accordance with the following equation:

$$TMI = \sum_{i=1}^{N} \left[G_c \Delta x_i(t) \right] + M_{stat}$$

wherein G_c is the corrected gradient data obtained after subtraction of the trend of the gradient of the ship bias from the raw gradient data, and

M_{stat} is the total magnetic intensity value at a point representing the start of the survey or at a location where a survey line and a tie line cross each other.

7. (Original): The method of claim 1 wherein the gradient of the ship bias is calculated according to the following equation:

$$G_{bias} = \frac{M_f(x) - M_r(x)}{\Delta l} = \frac{[D(t_1) - D(t_2)] + \{M_b(t_1) - M_b(t_2)]}{\Delta l}$$

where:

$$M_f(x) = M_e(x) + D(t_1) + M_b(t_1)$$

$$M_r(x) = M_e(x) + D(t_2) + M_b(t_2)$$

where M_f is the magnetic field as measured by the front sensor and which consists of the environmental field $M_e(x)$, diurnal variation $D(t_1)$, ship bias $M_b(t_1)$ caused by ship-induced field, sensor drifting and sensor perturbation, all at time t_1 and along track distance x, and at

some later time t_2, Δl is the distance between the sensors, $D(t_2)$ is the diurnal variations sensed by the rear sensor, and

$M_b(t_2)$ is the ship bias at time t_2 detected by the rear sensor M_r.

8. (Original): The method of claim 1 wherein the first and second sensors which are towed behind the ship are included in a group of three or more towed sensors.

9. (Original): The method of claim 8 wherein the number of sensors towed behind the ship comprises three sensors.

10. (Currently amended): A method of determining the subsurface structure of a survey area by obtaining gradient data for an exploration program, the method including:

towing first and second sensors behind a ship along predetermined survey lines;

obtaining raw magnetic gradient data from the sensors;

determining an estimate of the gradient of the ship bias from the raw magnetic gradient data obtained by the sensors;

determining the trend of the gradient of the ship bias ~~detected by the sensors~~ from that estimate of the gradient of the ship bias;

subtracting the trend from the raw magnetic gradient data to obtain corrected gradient data; ~~and~~

processing the corrected gradient data to provide a data output; and

processing the data output to determine the subsurface structure of the survey area.

11. (Canceled)

12. (Currently amended): The method of claim 10 wherein the raw magnetic gradient data is calculated as the measured magnetic signal at ~~the~~ a leading sensor of the sensors less the

measured magnetic signal at ~~the~~ a trailing sensor of the sensors, divided by the distance between the sensors.

13. (Original): The method of claim 10 wherein the trend of the gradient of the ship bias is determined by applying the gradient of the ship bias data to a B-Spline filter with smoothness 0.8.

14. (Original): The method of claim 10 wherein the further processing comprises the application of the corrected gradient data over sample intervals, integration of the corrected gradient data into total magnetic intensity data, and application of a low passed filter to the integrated total magnetic intensity data to provide the data output.

15. (Original): The method of claim 14 wherein the total magnetic intensity is obtained by integrating the corrected gradient data in accordance with the following equation:

$$TMI = \sum_{i=1}^{N} \left[G_c \Delta x_i(t) \right] + M_{stat}$$

wherein G_c is the corrected gradient data obtained after subtraction of the ship bias trend from the raw gradient data, and

M_{stat} is the total magnetic intensity value at a point representing the start of the survey or at a location where a survey line and a tie line cross each other.

16. (Original): The method of claim 10 wherein the gradient of the ship bias is calculated according to the following equation:

$$G_{bias} = \frac{M_f(x) - M_r(x)}{\Delta l} = \frac{[D(t_1) - D(t_2)] + [M_b(t_1) - M_b(t_2)]}{\Delta l}$$

where:

$$M_f(x) = M_e(x) + D(t_1) + M_b(t_1)$$

$$M_r(x) = M_e(x) + D(t_2) + M_b(t_2)$$

where M_f is the magnetic field as measured by the front sensor and which consists of the environmental field $M_e(x)$, diurnal variation $D(t_1)$, ship bias $M_b(t_1)$ caused by ship-induced field, sensor drifting and sensor perturbation, all at time t_1 and along track distance x, and at some later time t_2, Δl is the distance between the sensors, $D(t_2)$ is the diurnal variations sensed by the rear sensor, and

$M_b(t_2)$ is the ship bias at time t_2 detected by the rear sensor M_r.

17. (Original): The method of claim 10 wherein the first and second sensors which are towed behind the ship are included in a group of three or more towed sensors.

18. (Original): The method of claim 17 wherein the number of sensors towed behind the ship comprises three sensors.

19. (Currently amended): A method of subsurface exploration to determine viability of drilling by determining a subsurface structure of a survey region in a marine environment by considering magnetic data relating to the environment, and wherein the magnetic data has been obtained by:

obtaining raw magnetic gradient data from a plurality of sensors;

determining the gradient of the ship bias from data obtained by the sensors;

determining the trend of the gradient of the ship bias ~~detected by the sensors~~ from the gradient of the ship bias;

subtracting the trend from the raw magnetic gradient data to obtain corrected gradient data; and

processing the corrected gradient data to provide a data output; and

processing the data output to determine the subsurface structure of the survey region.

20. (Canceled)

21. (Currently amended): The method of claim 19 wherein the raw magnetic gradient data is calculated as the measured magnetic signal at ~~the~~ a leading sensor of the plurality of sensors less the measured magnetic signal at ~~the~~ a trailing sensor of the plurality of sensors, divided by the distance between the sensors.

22. (Original): The method of claim 19 wherein the trend of the gradient of the ship bias is determined by applying the gradient of the ship bias data to a B-Spline filter with smoothness 0.8.

23. (Original): The method of claim 19 wherein the processing comprises the application of the corrected gradient data over sample intervals, integration of the corrected gradient data into total magnetic intensity data, and application of a low passed filter to the integrated total magnetic intensity data to provide the data output.

24. (Original): The method of claim 23 wherein the total magnetic intensity is obtained by integrating the corrected gradient data in accordance with the following equation:

$$TMI = \sum_{i=1}^{N} \left[G_c \Delta x_i(t) \right] + M_{stat}$$

wherein G_c is the corrected gradient data obtained after subtraction of the ship bias trend from the raw gradient data, and

M_{stat} is the total magnetic intensity value at a point representing the start of the survey or at a location where a survey line and a tie line cross each other.

25. (Original): The method of claim 19 wherein the gradient of the ship bias is calculated according to the following equation:

$$G_{bias} = \frac{M_f(x) - M_r(x)}{\Delta l} = \frac{[D(t_1) - D(t_2)] + [M_b(t_1) - M_b(t_2)]}{\Delta l}$$

where:

$$M_f(x) = M_e(x) + D(t_1) + M_b(t_1)$$

$$M_r(x) = M_e(x) + D(t_2) + M_b(t_2)$$

where M_f is the magnetic field as measured by the front sensor and which consists of the environmental field Me(x), diurnal variation $D(t_1)$, ship bias $M_b(t_1)$ caused by ship-induced field, sensor drifting and sensor perturbation, all at time t_1 and along track distance x, and at some later time t_2, $\Delta 1$ is the distance between the sensors, $D(t_2)$ is the diurnal variations sensed by the rear sensor, and

$M_b(t_2)$ is the ship bias at time t_2 detected by the rear sensor M_r.

26. (Original): The method of claim 19 wherein the number of sensors towed behind the ship comprises three sensors.

27. (Currently amended): A method of drilling for a deposit in a marine environment, including:

determining the location of drilling from data which has been obtained and which indicates the possible existence of the deposit; and

which location is also determined by magnetic data which has been obtained by towing magnetic sensors behind a ship, the magnetic data being processed by:

obtaining raw magnetic gradient data from the sensors;

determining an estimate of the gradient of the ship bias from the raw magnetic gradient data obtained by the sensors;

determining the trend of the gradient of the ship bias ~~detected by the sensors~~ from that estimate of the gradient of the ship bias;

subtracting the trend from the raw magnetic gradient data to obtain corrected gradient data; and

processing the corrected gradient data to provide a data output.

28. (Canceled)

29. (Currently amended): The method of claim 27 wherein the raw magnetic gradient data is calculated as the measured magnetic signal at ~~the~~ a leading sensor of the magnetic sensors less the measured magnetic signal at ~~the~~ a trailing sensor of the magnetic sensors, divided by the distance between the sensors.

30. (Original): The method of claim 27 wherein the trend of the gradient of the ship bias is determined by applying the gradient of the ship bias data to a B-Spline filter with smoothness 0.8.

31. (Original): The method of claim 27 wherein the processing of the corrected gradient data comprises the application of the corrected gradient data over sample intervals, integration of the corrected gradient data into total magnetic intensity data, and application of a low passed filter to the integrated total magnetic intensity data to provide the data output.

32. (Original): The method of claim 31 wherein the total magnetic intensity is obtained by integrating the corrected gradient data in accordance with the following equation:

$$TMI = \sum_{i=1}^{N} \left[G_c \Delta x_i(t) \right] + M_{stat}$$

wherein G_c is the corrected gradient data obtained after subtraction of the ship bias trend from the raw gradient data, and M_{stat} is the total magnetic intensity value at a point representing the start of the survey or at a location where a survey line and a tie line cross each other.

33. (Original): The method of claim 27 wherein the gradient of the ship bias is calculated according to the following equation:

$$G_{bias} = \frac{M_f(x) - M_r(x)}{\Delta l} = \frac{[D(t_1) - D(t_2)] + [M_b(t_1) - M_b(t_2)]}{\Delta l}$$

where:

$$M_f(x) = M_e(x) + D(t_1) + M_b(t_1)$$

$$M_r(x) = M_e(x) + D(t_2) + M_b(t_2)$$

where Mf is the magnetic field as measured by the front sensor and which consists of the environmental field $M_e(x)$, diurnal variation $D(t_1)$, ship bias $M_b(t_1)$ caused by ship-induced field, sensor drifting and sensor perturbation, all at time t_1 and along track distance x, and at some later time t_2, $\Delta 1$ is the distance between the sensors, $D(t_2)$ is the diurnal variations sensed by the rear sensor, and

$M_b(t_2)$ is the ship bias at time t_2 detected by the rear sensor M_r.

34. (Original): The method of claim 27 wherein the first and second sensors which are towed behind the ship are included in a group of three or more towed sensors.

35. (Original): The method of claim 34 wherein the number of sensors towed behind the ship comprises three sensors.

36. (Original): The method of claim 35 wherein data from any two of the sensors is used to provide the raw magnetic gradient data.